SUMMARY OF APPLE MAGGOT TRAPPING ACTIVITIES

1986 THROUGH 2002

BACKGROUND

The State of Idaho ranked ninth in the country in production of apples in 2000. A total of 140,000,000 pounds of fruit were produced, statewide. This represents a significant contribution to the economy of the state, including both permanent and seasonal employment. It is, therefore, imperative that efforts be made to exclude pests of economic significance from the state through monitoring programs and control measures when and where pests are found.

The apple maggot (Rhagoletis pomonella) (AM) is indigenous to eastern North America. It was first discovered in the western United States in 1979. Recent evidence suggests that the pest may have existed many years prior to this date in Oregon, but has been heretofore misidentified due to its resemblance to the native Snowberry maggot (Rhagoletis zephyria). The pest has been trapped in Idaho since 1986, in an effort to delimit areas of infestation and begin control efforts.

In 1986, the Idaho State Department of Agriculture (ISDA) initiated a survey and detection program for apple maggot (AM). The purpose of the survey was to determine the presence or absence of AM in the commercial fruit production areas of Idaho to delimit any areas of infestation and to facilitate shipment of fresh fruit to other states and countries. The survey is concentrated in Canyon, Payette, Washington, Owyhee, and Gem counties, which are the five counties with commercial fruit production. Two commercial orchards, producing fruit for local sale in Nezperce County, were also trapped. Host plants in counties bordering Utah were also randomly trapped since the pest is known to occur in Utah.

Legal authority for this program was adopted in 1990 under authority of Title 22, Chapter 20, Idaho Code, Quarantines. Subsequent rules relating to Apple Maggot (IDAPA 02.06.23) and Cherry Fruit Fly (IDAPA 02.06.08 – Canyon County, and IDAPA 02.06.10 – Gem County) were promulgated.

In 2002, the Idaho Legislature adopted "The Idaho Plant Pest Act of 2002" changing Title 22, Chapter 20, which provides ISDA with authority to promulgate rules regarding quarantines for pests and diseases, including the Apple maggot. Revised rules regarding the Apple maggot which essentially combine several existing rules are currently pending in the 2003 legislature as IDAPA 02.06.08.

Trapping methods were modeled after those of the Washington State Department of Agriculture. Pherocon AM traps were placed in non-commercial host plants within a two-mile area surrounding commercial orchards. Ninety percent (90%) of the non-commercial host plants within the two-mile area were trapped. Host plants trapped included ornamental hawthorn, native hawthorn, apple, crabapple, cherry, peach, plum, pear, and apricot.

TRAPPING HISTORY IN IDAHO

1986

In 1986, 2,142 AM traps were set around the borders of commercial orchards in the five counties with commercial fruit production. Traps were spaced 200 to 400 feet apart. No AM were detected in any border traps.

Traps were additionally set in host trees in Ada, Caribou, Franklin, and Gooding counties. Traps were also set in Gem and Washington counties outside the two-mile boundary in fruit- bearing host trees. Apple maggot was detected in Ada, Caribou, Franklin, Gooding and Washington counties. Most of the adult AM were caught in native hawthorn (97.8%). The remaining insects caught were in hosts that were near native hawthorn. No detections were near any commercial fruit production.

1987

In 1987, the survey objectives were changed based on information obtained in 1986. A greater emphasis was placed on finding and trapping in native hawthorn outside the two-mile boundary area around commercial fruit orchards. The trap concentration was maintained within ½-mile of commercial orchards at 1986 trapping levels. Thirteen counties in southern Idaho were trapped. Traps were placed in native hawthorn and wild fruit trees.

Apple maggot were detected in native hawthorn near the Manns Creek Reservoir in Washington county, four miles from the nearest commercial production. Several AM were detected in native hawthorn, wild plum and apple at the south end of Manns Creek Reservoir near the dam.

Ten traps were set in native hawthorn along Haw Creek in Gem County located more than three miles north and east of the nearest commercial orchard. Two hundred thirty-five AM were caught from July 10 to August 27, 1987. Based on the known range of the pest and the lack of host material between the positive site and any commercial production, it is not thought that these areas of infestation pose a threat to commercial fruit production. Traps were also set every 100 feet along the border of the nearest commercial orchard. No AM were caught in these border traps.

Apple maggot was detected in Ada County again in 1987, in native hawthorn, ornamental hawthorn, apple, crabapple, and plum. Trap locations were along the Boise River and several locations in residential areas throughout Boise City. All positive sites were within ½-mile of native hawthorn.

Four traps were set on private land near the northern border of Ada County along Highway 21. Two traps were placed in native hawthorn and two in plum. A total of 430 AM were caught, with the majority in native hawthorn between July 10 and September 13. No commercial fruit production exists in Ada County.

Apple maggot was also detected in southern Boise County just north of the northern Ada county sites. Several AM were detected in Gooding County in native hawthorn and wild apple. No AM were detected near two small commercial orchards in Nezperce County in northern Idaho. All apple production from these commercial orchards is for local sale. No AM were detected in Canyon, Payette, or Owyhee counties in 1987.

1988

The AM survey was continued in 1988 (Table 1.) to repeat and confirm data obtained in 1987. A total of 527 traps were placed in the five commercial fruit producing areas of Southwestern Idaho. Two positive sites near Mann Creek Reservoir from 1987 were trapped in 1988. No AM were detected. Several AM were again detected in one sentinel site (Hawthorne) in northern Gem County along Haw Creek. All positive sites near Mann Creek Reservoir and Haw Creek are more than three miles from any fruit producing areas.

1989

In 1989, the ISDA continued a trapping program for export of apples and other soft fruits to other states and foreign countries. The overall survey program was adjusted and the number of traps set was increased in certain areas to meet additional export requirements (Table 1). It was felt that sites of AM infestation outside the commercial production area had been clearly identified and that program emphasis needed to be on maintaining a pest-free status of the commercial production areas. Additional traps were set to insure that areas not known to be infested with AM remained non-infested, and areas of known infestation were clearly identified and monitored to detect any changes.

Fifty percent (50%) of the hosts within ¼-mile of any commercial apple orchard were trapped to detect and monitor the presence of apple maggot in Canyon, Payette, and Owyhee counties. This method was used since no AM had been detected in these counties. Hosts included backyard, wild apple, and ornamental or native hawthorn. Additionally, some traps were placed in host trees outside the ¼-mile boundary in Canyon and Payette counties. Traps were monitored every seven to ten days through the apple-growing season. No AM were detected in these counties in 1989.

The AM has been detected in remote areas of Gem and Washington counties, at least three miles from any commercial fruit production. Under the trapping guidelines set forth for "infested" counties, traps in Gem County were set along the borders of each commercial apple orchard 100-150 feet apart. Border trapping of commercial orchards was the most time and cost efficient method considering the large number of abandoned orchards and under managed backyard trees present within ¼-mile of the commercial production areas. In Washington County, traps were placed in all (100%) of the alternate hosts within ¼-mile of any commercial apple orchard. There were a minimum of abandoned or under managed trees in Washington county which made alternate host trapping the most cost and time effective method of trapping instead of border trapping of commercial orchards.

1990

Interior Apple Maggot Quarantine Rules were developed and enacted in 1990 to better define production areas free of AM, to protect those production areas from possible infestation by the pest, and to complement the existing Apple and Cherry Quarantine Rules (Attachment 2). The interior quarantine established specific boundaries of a "Control Area" where AM has not been detected. The "Control Area" contains the entire counties of Canyon, Payette, and Owyhee; and portions of the counties of Gem and Washington lying south of the "Quarantine Area" where AM is known to occur. All of the commercial fruit production areas are located within the "Control Area" where AM has not been detected. Attachment 3 outlines the "Control" and "Quarantine Areas" as defined in the Interior Apple Maggot Quarantine Rules.

The AM trapping program was adjusted in 1990 to reflect information collected in previous years' surveys and the enactment of an Interior Apple Maggot Quarantine establishing the "Control Area." A total of 639 traps were set in nine counties (Table 1). A total of 58 AM were detected. All detections were at sites already known to be infested based on prior years' trapping data and were at least three miles from any commercial production area (Table 1).

Fifty percent (50%) of host trees within ¼-mile of commercial orchards were trapped in Canyon, Payette, Owyhee, Gem and Washington counties. No AM were detected in any of the border traps within ¼-mile of any commercial production area. Additional traps were placed outside the "Control Area" within the "Quarantine Area" in Gem, Washington, Boise, and Ada counties. Trap sites were those where AM had been detected in prior years. All positive sites were in native hawthorn or wild apple within a few feet of native hawthorn (Table 1). In 1990, several native hawthorn trees were killed or removed at the end of the season near Manns Creek Reservoir in Washington County.

An additional sixteen traps were placed in wild apple and native hawthorne in Franklin and Gooding counties. There is no commercial fruit production in either county but these counties were trapped because of their proximity to Utah where AM is known to occur. No AM were detected at any of these sites.

1991 & 1992

The apple maggot survey program was continued in 1991 and 1992 at approximately the same levels as in 1990 (Table 1). No AM were detected within four miles of any commercial production orchard or within the "Control Area" as defined in Idaho's Interior Apple Maggot Quarantine Rules. Trap numbers in each county varied slightly each year based on occurrence of host species bearing fruit within the ¼-mile boundary. Apple maggot continued to be detected sporadically at the same infested sites as in previous years. Additional trap sites of native hawthorn were identified and traps were set. These new sites were south of Manns Creek Reservoir and along Monroe Creek in Washington County. No AM were detected at these new sites. The areas of infestation do not seem to have expanded since the AM was first detected. Given the distance reported that the pest can move each season, it seems unlikely that the major apple and soft fruit production areas are in danger of becoming infested in the near future. Six traps were set in Boise County and five traps were set in Ada County at sites of previous AM detections.

1993

In 1993, Payette County enacted an "Abandoned Orchard" ordinance and appointed an Orchard Review Board to address concerns regarding abandoned and/or under managed fruit orchards in the county. The ordinance allows the Orchard Review Board to take action on complaints filed even to the extent of making arrangements to remove host material and attach the cost as a lien to the tax base of the property. The ISDA maintains a monetary fund to initially pay for actions taken to control pests in under managed orchards and/or to remove abandoned fruit trees. The counties where the actions take place are responsible for reimbursing the fund when monies are received as part of a tax payment on the property. Under this ordinance, several acres of under managed orchard were removed. Gem County also enacted an "Abandoned Orchard" ordinance and appointed an Orchard Review Board. Several small abandoned orchards were removed under supervision of the Board in 1993 and early 1994. More recently, Canyon and Washington counties have enacted Abandoned Orchard programs based on the Payette county program.

The 1993 trapping program reflects a reduction in trap numbers especially in Gem and Payette counties, while the survey objectives remained the same as in the three previous years. This reduction was for several reasons. Because of extremely dry conditions, many host trees did not produce fruit. It was not felt that trapping a host tree with no fruit would yield valid data. In Gem and Payette counties, there were a number of backyard and abandoned host trees removed, thereby reducing the number of available host within the ¼-mile trapping boundary. This was primarily due to enacting the "Abandoned Orchard" ordinances in those two counties. Some neighboring states also removed the quarantine requirements for movement of apples and soft fruit. This was based on previous trapping history, the development of an interior quarantine and the abundance of information regarding location of known pest infestations.

In 1993, 148 AM traps were set in six counties (Table 1). Five counties were located in southwestern Idaho and one is in northern Idaho. Six traps were set in a small commercial orchard in Bonner County (northern Idaho). Traps were set to determine freedom from AM for export to other neighboring states since the orchard is maintained as "Certified Organic." No AM were detected in any of the six traps. The survey program was continued from the previous year in the five southwestern Idaho counties. No AM were detected in 1993, in the "Control Area" or within four miles of any commercial production area. No traps were deployed in Owyhee County because all host material within ¼-mile of the commercial orchards had been removed. It was not felt that trapping in the commercial orchards was feasible since an integrated pest management program was in place. Ten traps were placed at the same sites in southern Boise county and five traps were set at the same sites in northern Ada county as in previous years, to detect the AM and to determine approximate first emergence. No AM were detected at any of the Ada county sites in 1993. A total of 147 AM were detected in Boise county. These traps are grouped together at several sites in previously infested native hawthorn and wild apple within 1 ½-miles of each other.

1994

In 1994, traps were again set using the same guidelines as in 1993. Fifty percent (50%) of host trees bearing fruit located within ¼-mile of any commercial fruit production areas were trapped in Canyon, Payette, Gem, and Washington counties (Table 1). No traps were set in Owyhee County because host trees within ¼-mile of commercial production areas had been removed in 1993. Traps were again set at sites of previous AM detections outside the "Control Area" in Gem, Washington, Ada, and Boise counties.

1995 & 1996

In 1995 and 1996, the AM survey was adjusted and fewer traps were placed (Table 1). The objective was to continue a maintenance survey. It was felt that this was adequate given previous years' trapping data, the enforcement of the Interior Apple Maggot Quarantine Rules, and the use of integrated pest management practices in the commercial production areas within the "Control Area." Trap numbers were also lower in 1995 due, again to lack of fruit bearing hosts. This was primarily due to a late-season freeze that destroyed the blossoms. Additional host trees had also been removed in both Gem and Payette counties in 1995 and 1996. No AM were detected at any trap sites in Canyon, Payette, Gem, Washington or Ada counties in 1995 or 1996. Ten AM were detected at trap sites in native hawthorn in Boise County in 1995.

1997

In 1997, one positive and two tentatively positive trap sites were reported (Table 1). The one positive site was a sentinel site on native hawthorn in Boise county, which is far removed from any commercial fruit production area, and where AM have been detected in most years. This site is not within the "Control Area" as defined in the Idaho Interior Apple Maggot Quarantine Rules. Seventy-four traps were placed in seven counties in and around the commercial apple production areas of each county. A total of 101 traps were placed at 101 sites in commercial cherry orchards in Canyon, Gem and Payette counties for a USDA sponsored European Cherry Fruit Fly (Rhagoletis cerasi) survey. All trap results were negative. These traps were also checked for other Rhagoletis spp. including apple maggot (a total of 176 traps were checked for apple maggot in 1997).

Two allegedly positive AM traps in backyard fruit trees were found in 1997. One trap each in Gem and Payette counties, within the control areas. There is some possibility that they may have been the snowberry maggot (Rhagoletis zephyria), however, no specimens were kept and no genitalia dissections were performed. Therefore, the apple maggot identification was considered tentative. These two sites were targeted for delimit trapping in 1998.

1998

Apple maggot was not detected at any sites in 1998. No AM were detected at a sentinel site on native hawthorn in Boise county, which is far removed from any commercial fruit production where AM had been detected in previous years. This site is not within the "Control Area" as defined in Idaho's Interior Apple Maggot Quarantine Rules. A total of 147 traps were placed in six counties (Ada, Boise, Canyon, Gem, Payette, and Washington) in and around the commercial apple production areas (Table 1). Delimiting

trapping was undertaken at two sites, one each in Gem and Payette counties, within the quarantined areas. The apple maggot was tentatively detected late in the 1997 season at both of these sites. No AM were detected in any of the delimiting traps or at the site of the tentative 1997 detections.

1999

During the 1999 trapping season, no AM were detected in any traps, or at any sites within the "Control Area." One AM was detected in native Hawthorne in Washington County at a sentinel site several miles from any commercial fruit production area. This sentinel site has been routinely used as a first emergence detection site. Two AM were detected at one sentinel site in Boise County more than five miles from any commercial fruit production area. This is also a sentinel site that has been routinely used as a first emergence detection site. Four traps were placed along the borders of the commercial production areas in Owyhee County because there was no host material outside the commercial orchards, but the county had not been surveyed for several years. No AM were detected. A total of 174 traps were placed in seven counties (Ada, Boise, Canyon, Gem, Owyhee, Payette, and Washington) in and around commercial apple production areas (Table 1).

2000

No positive detections were made at any sites trapped within the control area in 2000. Thirty-four adults were caught at a sentinel site on native hawthorn; in Boise County and two were trapped in Washington County on native hawthorn, both sites are far removed from any commercial fruit production area and are outside of the apple maggot control area or AM free zone. We are investigating some unconfirmed trap catches in Gem County in cherry that were caught in very early June. These catches were recorded as AM, but not confirmed. These AM were caught almost one and a half months earlier than any previous trap catch. Sentinel site traps in Boise County have routinely detected AM for the past several years. In 2000, 277 traps were placed at 235 sites in seven counties (Boise, Bonner, Canyon, Gem, Owyhee, Payette, and Washington) in and around the commercial apple production areas of each county. This program is scheduled for a review to see that it meets the North American Plant Protection Organization protocol for fruit fly-free areas.

2001

In 2001, 180 traps were placed at 145 sites in seven counties (Boise, Bonner, Canyon, Gem, Owyhee, Payette, and Washington) in and around the commercial apple production areas of each county. Traps were only placed in apple, crabapple, and Hawthorne trees. No positive detections were made at any sites trapped within the AM free zone area in 2001. This zone is established by rules. Traps were also placed at two sites in Gem County where unconfirmed detections were noted in 2000. No positive detections were made at either site. Sixty-two adults were caught at a sentinel site on native hawthorn; in Boise County and one was trapped in Washington County on native hawthorn, both sites are outside of the apple maggot AM free zone. All identifications are made through genitalia dissections performed by University of Idaho taxonomists at the WFBARR Entomological Museum in Moscow, Idaho under the direction of Dr. James D. Johnson. A quality control program was implemented this year whereby fake flies were placed in

traps by supervisory personnel with directions that the trap be replaced and taken in to the program supervisor. All orchards and trap sites were plotted this year using Geographic Information System (GIS) and Global Positioning System (GPS) technology. The historical trapping density and placement criterion will be re-evaluated this winter.

2002

A total of 444 traps at 271 sites in six southwestern Idaho and one Northern Idaho counties were set and monitored. Traps were, again in 2002, only placed in apple, crabapple, and hawthorne trees. A total of sixteen traps were positive for AM with 49 specimens trapped and confirmed. Boise County trap sites were again utilized as sentinal sites to detect first emergence. Twelve traps in Boise County were positive for AM with a total of 41 AM trapped and confirmed. The first find was on June 28, and continued throughout the season at several of the sites. The last specimen was trapped on September 23.

In Washington County, Two Apple maggot were trapped at a sentinal site in Hawthorne along Mann Creek, outside the control area (north of Weiser) on August 27. A second AM was trapped and confirmed at the same site on September 10. In addition, three sites in backyard trees were confirmed positive for AM for the first time this season. All three sites are within ¾ mile of each other and are located approximately 4 miles east and 1 to 2 miles south of the sentinal site along Mann Creek. The first catch at any of these three sites was on July 8 in a trap set in a backyard hawthorne. The final catch at any of these three sites was on September 10 in a trap set in a hawthorne. AM was also trapped in a backyard crabapple tree at one site. A total of five specimens were trapped and all were confirmed as AM. As a result of these positive finds, the Washington County Abandoned Orchard Review Board, under direction from the Washington County Commission is working with the homeowners where the AM was trapped to control the pest or remove the host material. The Review Board is also working with other homeowners in the area to prevent spread of the pest. ISDA will, in 2003, significantly increase number of traps set in the area in support of pest control and host removal efforts by the Review Board.

OVERALL SUMMARY

The ISDA, in 1990, enacted Interior Apple Maggot Quarantine Rules to regulate movement of potential host material. Commercial fruit producers in the "Control Area" employ integrated pest management practices. The areas of infestation used as sentinal sites in Boise and northern Washington counties have been delimited and have not expanded since their first detection in 1986. The AM has primarily been detected in native or ornamental hawthorn. When AM has been detected in wild apple, the trap site was very closely associated with fruit-bearing hawthorn. One previously positive sentinal site in Washington county was removed and trapping of additional host material in the vicinity did not detect any AM until the 1999 and 2002 trapping seasons when several AM were detected in wild hawthorne at two sites. One in 1999 at Mann Creek Reservoir and in 2002 along Mann Creek approximately two miles south of Mann Creek

Reservoir. Several areas of wild hosts are developing along creek drainages north of the control area have been used as trap sites in 1999 – 2002. Four counties have enacted "Abandoned Orchard" ordinances and are actively removing abandoned or under managed host trees. This includes the newly confirmed sites (2002) in Washington County. The Washington County Abandoned Orchard Review Board is also examining options for controlling potential host material along creek drainages cited above to further protect commercial apple production in the county.

OTHER FRUIT FLY DETECTIONS

Several other species of fruit fly have been occasionally detected during the apple maggot detection surveys. Cherry fruit fly (Rhagoletis cingulata) has been detected in traps set in non-commercial cherry fruit trees, which is the only cited host for this pest. The gooseberry maggot (Rhagoletis ribicola) has been detected, though very rarely, early in the season. Host trees include gooseberry and currant. The walnut husk fly (Rhagoletis completa) has been detected in several areas, though do not appear to be a common occurrence. Host trees of the walnut husk fly include walnut and peach.

Table 1. Idaho Apple Maggot Trapping Program

1988 through 2002

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	SITES NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
BONNER	2002	6	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	SITES NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
CANYON	1988	190	0	0	0
CANYON	1989	88	0	0	0
CANYON	1990	44	0	0	0
CANYON	1991	36	0	0	0
CANYON	1992	44	0	0	0
CANYON	1993	31	0	0	0
CANYON	1994	28	0	0	0
CANYON	1995	14	0	0	0
CANYON	1996	16	0	0	0
CANYON	1997	47	0	0	0
CANYON	1998	32	0	0	0
CANYON	1999	30	0	0	0
CANYON	2000	80	0	0	0
CANYON	2001	48	0	0	0

CANYON	2002	126	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER SITES POSITIVE	NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
PAYETTE	1988	195	0	0	0
PAYETTE	1989	113	0	0	0
PAYETTE	1990	82	0	0	0
PAYETTE	1991	75	0	0	0
PAYETTE	1992	82	0	0	0
PAYETTE	1993	35	0	0	0
PAYETTE	1994	37	0	0	0
PAYETTE	1995	22	0	0	0
PAYETTE	1996	22	0	0	0
PAYETTE	1997	43	1****	3****	1****
PAYETTE	1998	42	0	0	0
PAYETTE	1999	49	0	0	0
PAYETTE	2000	73	0	0	0
PAYETTE	2001	55	0	0	0
PAYETTE	2002	127	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER SITES POSITIVE	NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
OWYHEE	1988	0	0	0	0
OWYHEE	1989	5	0	0	0
OWYHEE	1990	5	0	0	0
OWYHEE	1991	5	0	0	0
OWYHEE	1992	5	0	0	0
OWYHEE	1993	0	-- **	-- **	-- **
OWYHEE	1994	0	-- **	-- **	-- **
OWYHEE	1995	0	-- **	-- **	-- **
OWYHEE	1996	0	-- **	-- **	-- **
OWYHEE	1997	0	-- **	-- **	-- **
OWYHEE	1998	0	-- **	-- **	-- **
OWYHEE	1999	4	0	0	0
OWYHEE	2000	8	0	0	0
OWYHEE	2001	8	0	0	0
OWYHEE	2002	19	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER SITES POSITIVE	NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
GEM	1988	103	1	-- *	-- *

GEM	1989	1660	1	4	3
GEM	1990	472	1	5	2
GEM	1991	400	1	9	2
GEM	1992	454	1	7	2
GEM	1993	44	1	13	3
GEM	1994	44	0	0	0
GEM	1995	20	0	0	0
GEM	1996	21	0	0	0
GEM	1997	65	1****	1****	1****
GEM	1998	51	0	0	0
GEM	1999	72	0	0	0
GEM	2000	81	2^^	15^^	
GEM	2001	46	0	0	0
GEM	2002	95	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	NUMBER SITES DETECTED	NUMBER AM POSITIVE TRAPS
WASHINGTON	1988	23	0	0	0
WASHINGTON	1989	81	1	3	2
WASHINGTON	1990	25	2	7	1
WASHINGTON	1991	23	1	13	1
WASHINGTON	1992	25	0	0	0
WASHINGTON	1993	23	0	0	0
WASHINGTON	1994	12	0	0	0
WASHINGTON	1995	7	0	0	0
WASHINGTON	1996	18	0	0	0
WASHINGTON	1997	9	0	0	0
WASHINGTON	1998	9	0	0	0
WASHINGTON	1999	10	1^	1^	1^
WASHINGTON	2000	16	1^^	2^^	1^^
WASHINGTON	2001	12	1^^^	1^^^	1^^^
WASHINGTON	2002	46	4	8	4

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	NUMBER SITES DETECTED	NUMBER AM POSITIVE TRAPS
BOISE	1988	8			
BOISE	1989	7	0	0	0
BOISE	1990	6	1	13	2
BOISE	1991	6	1	46	3
BOISE	1992	6	0	0	0
BOISE	1993	10	1	147	6
BOISE	1994	4	1	40	2

BOISE	1995	2	1	10	2
BOISE	1996	2	0	0	0
BOISE	1997	5	1	2	1
BOISE	1998	5	0	0	0
BOISE	1999	3	1	2	1
BOISE	2000	13	2	34	5
BOISE	2001	5	4	63	4
BOISE	2002	25	4	41	12

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	SITES NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
ADA	1988	8			
ADA	1989	5	0	0	0
ADA	1990	5	0	0	0
ADA	1991	5	1	2	1
ADA	1992	5	0	0	0
ADA	1993	5	0	0	0
ADA	1994	5	0	0	0
ADA	1995	1	0	0	0
ADA	1996	1	0	0	0
ADA	1997	1	0	0	0
ADA	1998	2	0	0	0
ADA	1999	0	0	0	0
ADA	2000	0	0	0	0
ADA	2001	0	0	0	0
ADA	2002	0	0	0	0

COUNTY	YEAR	NUMBER TRAPS	NUMBER POSITIVE	SITES NUMBER AM DETECTED	NUMBER POSITIVE TRAPS
TOTAL TRAPS	1988	527	1	-- *	-- *
TOTAL TRAPS	1989	1959	3	20	7
TOTAL TRAPS	1990	639	4	58	6
TOTAL TRAPS	1991	550	4	70	7
TOTAL TRAPS	1992	621	1	7	2
TOTAL TRAPS	1993	148	2	160	9
TOTAL TRAPS	1994	130	1	40	2
TOTAL TRAPS	1995	66	1	10	2
TOTAL TRAPS	1996	80	0	0	0
TOTAL TRAPS	1997	176	3****	6****	3****
TOTAL TRAPS	1998	147	0	0	0
TOTAL TRAPS	1999	174	2	3	2
TOTAL TRAPS	2000	277	3	51	8

TOTAL TRAPS	2001	180	5	64	5
TOTAL TRAPS	2002	444	8	49	16

* Trap sites along Haw Creek in Gem County were positive for Am in 1988. Number of AM detected is not available.

** No host trees were found within 1/4 mile of any commercial production in the county. Several abandoned backyard trees had been removed.

*** Detection sites were composed of clusters of wild apple intermixed with native hawthorn. All sites are located along Harris Creek nine miles from any commercial production. These are sentinal sites used to detet first emergence of AM.

**** Suspect Apple Maggot adults were trapped. The suspect insects were found late in the season. There is some possibility that these may be the snowberry maggot and since no genetalia dissections were performed, the apple maggot identification is tentative.

^ This trap site is outside the control area as defined in Idaho Rules and has in the past been a detection site in native hawthorne for first emergence in the area.

^^ Site located outside the control area as defined in Idaho Rules. Detection not confirmed.

^^^ Site located outside the control area as defined in Idaho Rules. Identification confirmed as AM through genitalia dissection. Site has been a sentinal detection site in prior years.

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